NEXTera® ENERGY POINT BEACH

August 23, 2012

NRC 2012-0066
10 CFR 50.73

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Point Beach Nuclear Plant, Unit 2
Docket 50-301
Renewed License No. DPR-27

Licensee Event Report 301/2012-001-00
Unit 2 Manual Reactor Trip

Enclosed is Licensee Event Report (LER) 301/2012-001-00 for Point Beach Nuclear Plant, Unit 2. NextEra Energy Point Beach, LLC is providing this LER regarding the Unit 2 manual reactor trip.

This submittal contains no new or revised regulatory commitments.

If you have questions or require additional information, please contact Mr. Jim Costedio at 920/755-7427.

Very truly yours,

NextEra Energy Point Beach, LLC

Larry Meyer
Site Vice President

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

NRC FORM 366 (10-2010) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB: NO. 3150-0104 | EXPIRES: 10/31/2013

LICENSEE EVENT REPORT (LER)

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4. TITLE
Unit 2 Manual Reactor Trip

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									NA	NA
06	27	2012	2012	- 001	- 00	08	26	2012	FACILITY NAME: NA	DOCKET NUMBER: NA

9. OPERATING MODE
1

10. POWER LEVEL
100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Kim Locke - Engineering Analyst	920/755-7655

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	JJ	SC	WEST	YES					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On June 27, 2012 at 2046, a Point Beach Nuclear Plant (PBNP) Unit 2 manual reactor trip was actuated due to indications of a loss of load to the main turbine.

At approximately 2045 alarms were received in the control room indicating reduced PBNP Unit 2 turbine first stage pressure and generator megawatts, indicative of a significant reduction in turbine load. Control rods were responding as designed by inserting into the reactor to reduce reactor power. Operations noted that the turbine speed indication on the EH control panel was reading high with the generator output breaker closed, indicating a control system failure. Based on these indications, the Shift Manager directed that the reactor be shutdown by manually actuating the reactor protection system. No automatic reactor protection setpoints were exceeded and an automatic shutdown was not actuated or required.

Based on troubleshooting, NextEra determined that the loss of turbine load was due to a failure of the speed channel card in the EH system. The speed channel card was replaced.

Pursuant to 10 CFR 50.73 (a)(2)(iv)(A), the event is reportable as an event or condition that resulted in manual actuation of the reactor protection system.

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Description of the Event

On June 27, 2012, Point Beach Nuclear Plant (PBNP) Unit 2 was operating in a steady state condition at 100% power with no plant evolutions in progress. At approximately 2045 alarms were received in the control room indicating reduced Unit 2 turbine [TRB] first stage pressure and generator megawatts. This was indicative of a significant reduction in turbine load. Control rods responded as designed by inserting into the reactor to reduce reactor power. Operations noted that the turbine speed indication on the turbine EH control panel was reading high with the generator output breaker closed, indicating a control system failure. Based on these indications, at 2046 the Shift Manager directed that the reactor be shutdown by manually actuating the reactor protection system. No automatic reactor protection setpoints were exceeded and an automatic shutdown was not actuated or needed. Plant response to this event was as expected.

A failure investigation process (FIP) was entered. Based on troubleshooting, NextEra determined that the loss of turbine load was due to a failure of the speed channel 'A' card in the EH system.

Speed channel cards in the EH system were replaced with spares and calibrated. This was done as a conservative measure since only the 'A' card had failed. The calibration was completed satisfactory and the EH system was subsequently returned-to-service.

This event is not reported as a safety system functional failure.

Analysis of the Event

Turbine speed is controlled by the turbine electro-hydraulic (EH) [HCU] system. The EH system has two independent speed sensing circuits, each comprised of a passive probe and two printed circuit cards.

The Main speed channel circuit is designed to regulate turbine speed. When the turbine is offline it inputs to the turbine speed controller, and is used for turbine roll up. When the turbine is connected to the grid, it is the input to the frequency correction circuitry.

The Auxiliary speed channel circuit is dedicated to overspeed protection. When an overspeed condition is sensed in excess of 103% of rated turbine speed, the Auxiliary Governor closes the governor valves and actuates other protective features.

In the Auxiliary speed channel circuit, turbine speed is sensed in the turbine pedestal and supplied to the speed channel 'A' card. This card converts the signal to a different signal type that is then sent on to the speed channel 'B' card.

The speed channel 'B' card uses the signal from the speed channel 'A' card and converts it to a signal that is proportional to shaft speed. This signal is used by the Auxiliary Governor circuit shaft speed display in the Control Room, to shut the turbine governor valves if the auxiliary speed channel senses a shaft speed of >103% of rated speed, and to actuate an alarm in the Control Room. Actuation of the Auxiliary Governor removes steam from the turbine. The generator loses load due to lack of motive force. The Turbine Stop valves are unaffected and stay open when the Auxiliary Governor is activated.

NextEra determined that the Auxiliary speed channel circuit channel 'A' card failed. The card failed high resulting in a high signal sent to the speed channel 'B' card which caused the speed channel 'B' card to generate a >2500 rpm signal. This was the cause of the Control Room turbine speed indication reading

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NARRATIVE

high. This also caused the Auxiliary Governor to close the governor valves, which caused the generator to shed load. These indications were the initiating event for the PBNP Unit 2 manual reactor trip.

Analysis of Safety Significance

A manual reactor trip was initiated in response to the turbine governor valves closing and the loss of generator load while the reactor was still at power. No automatic reactor protection setpoints were exceeded, and the automatic reactor protection system was not actuated nor needed. Plant systems functioned as required following the trip.

The reactivity effects during this particular event had no impact on the safety of the core. The initial event resulted in reactor coolant system (RCS) temperature rising as steam demand was reduced by the closing governor valves. At this stage in core life, the moderator temperature coefficient is largely negative (approximately -25 pcm/deg F); thus, the rising temperature added significant negative reactivity. The control rods began to insert into the core to control the temperature increase as designed. The Shift Manager and operating crew responded appropriately by manually actuating the reactor protection system to shut down the reactor.

Corrective Actions

The 'A' and 'B' speed cards were replaced with spares and calibrated.

Similar Events

None

Failed Components

NAND gate location A8B, Motorola HTL logic chip MC662L